

Reference Bacteriology

About Reference Bacteriology:

The Reference Bacteriology test area serves as a referral laboratory for the culture and identification of bacterial isolates that are unusual or difficult to identify. Certain clinical samples are acceptable for primary isolation, but otherwise pure isolates are required for identification and serotyping. Anaerobic testing is not performed at VDHL.

The following services are available from the VDHL Reference Bacteriology Lab:

- ❖ Identification of *Bordetella pertussis* and *B. parapertussis*
- ❖ Culture and Identification of *Neisseria gonorrhoeae*
- ❖ Identification and Serotyping of *Neisseria meningitidis*
- ❖ Serotyping of *Haemophilis influenzae*
- ❖ Culture and Identification of *Legionella* spp.
- ❖ Serotyping of *Salmonella* spp.
- ❖ Confirmation of *E.coli* O157:H7
- ❖ Confirmation of Shiga-toxin producing *E.coli*, non-O157:H7
- ❖ Identification of *Shigella* spp.
- ❖ Serotyping of *Vibrio cholerae* (Ogawa and Inaba)
- ❖ Culture and Identification of *Campylobacter jejuni*
- ❖ Culture and Identification of *Listeria* spp.
- ❖ Culture and Identification of *Corynebacterium* spp.
- ❖ Other

PulseNet

About PulseNet:

PulseNet is a program that was developed by, and is run under the guidance of the Centers for Disease Control and Prevention (CDC). PulseNet functions in all fifty State Public Health laboratories, as well as USDA, FDA, and international public health labs.

The goals of PulseNet are to:

- ❖ Detect food borne disease case clusters by DNA fingerprinting
- ❖ Facilitate early identification of common source outbreaks
- ❖ Allow for real-time communication among state, local health departments, and international partners
- ❖ Help food regulatory agencies identify areas where implementation of new measures is likely to increase the safety of our food supply, including food recalls when necessary

How PulseNet works in Vermont:

- ❖ A healthcare provider lab submits an isolate to the Vermont Department of Health Laboratory (VDHL) through the VDHL reference lab, or via a request for an enteric screen. The PulseNet lab in Vermont currently accepts *Salmonella*, *Shigella*, all enterohemorrhagic *E. coli*, and *Listeria* for PulseNet subtyping.
- ❖ A microbiologist at VDHL uses molecular techniques (Pulsed Field Gel Electrophoresis) to make a DNA fingerprint for each isolate.
- ❖ The fingerprint is compared to fingerprints of other isolates received by VDHL from all VT healthcare provider laboratories.
- ❖ If there is a match between two VT isolates, VT epidemiologists will conduct interviews with the patients involved to try and find a common cause of infection.
- ❖ Images of the DNA fingerprints are uploaded to an international database maintained by CDC. Database managers at CDC gather fingerprints from all PulseNet participating laboratories (national and international) and continuously look for isolate matches between states and countries.
- ❖ If a match is detected by CDC, VT epidemiology is notified and works closely with epidemiologists from other states and/or countries to conduct interviews to try and find a common cause of infection.

Bioterrorism

About the Bioterrorism Test Area:

The Bioterrorism Test Area serves as a referral laboratory for the confirmatory identification of suspect bioterrorism agents. Certain clinical samples are acceptable for primary isolation, but otherwise pure isolates are required for identification.

The following agents will only be accepted if the provider has consulted with the Vermont Department of Health Laboratory Bioterrorism Testing Area and has received approval for testing:

- ❖ *Bacillus anthracis*
- ❖ *Burkholderia spp.*
- ❖ *Brucella spp.*
- ❖ *Clostridium botulinum*
- ❖ *Coxiella burnetii*
- ❖ *Francisella tularensis*
- ❖ *Variola* (VZV rule-in/Orthopox rule-out)
- ❖ *Yersinia pestis.*

The Vermont Department of Health Laboratory must be notified prior to submission of specimens. Transport supplies will be provided if requested.

VDHL is a Reference Laboratory of the Laboratory Response network (LRN) and assists Sentinel Labs (hospital labs) by providing training and support in specimen collection, storage, shipment, evidence control measures, and recognition of BT agents.

Chemical Terrorism

About the Chemical Terrorism Unit:

The Chemical Terrorism Unit functions as a Level 2 laboratory for the identification and quantification of suspected chemical agents. The laboratory accepts clinical specimens (blood and urine) with advance notice and with adherence to specific guidelines on collection, packaging, shipping and chain of custody. These types of analyses take a minimum of 36 hours to complete.

Testing can be performed for a number of analytes, including:

- ❖ nerve agent metabolites
- ❖ metals
- ❖ cyanide compounds
- ❖ toxic industrial chemicals

VDHL is a Level 2 Laboratory of the Laboratory Response Network (LRN), and assists Level 3 Labs training and support in collection, packaging, shipping, and evidence control measures for chemical and biological agents.